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TREE PLANTING

As an Additional Means of Gully Control in Oklahoma

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EXPERIMENT STATION

This gully was once a cotton field and rural road.

WHY DO I HAVE A GULLY PROBLEM?

Gully erosion in central and southern Oklahoma occurs in all shapes and sizes. When heavy rainfall, erodible soils, sloping land and sparse vegetative cover are combined, erosion is evident. Runoff water concentrated in narrow ditches gains velocity and cuts into the soil from depths of 1 or 2 feet (0.31 to 0.61 m) to as much as 75 to 100 feet (22.9 to 30.5 m).

As a landowner, you are concerned with protecting your investment and making these eroded areas productive. At the same time, efforts to control the erosion will stop the sediment that is ruining our major river systems, polluting our drinking water, and destroying the fishing. A restored gully is more attractive, and depending on the treatment used, can

provide wildlife habitat, fence posts, and firewood for home use. As a landowner, your concern should be to *prevent* gullies from starting in the first place, through water control and conservation practices. However, if gullies do start, treat them properly, and control the water too.

WHAT CAN I DO ABOUT MY GULLY?

The purpose of this publication is to show how tree planting in conjunction with other gully control measures can provide multiple benefits on your land in addition to erosion control. Tree planting in gully stabilization work has been overlooked as an alternative mainly due to the harsh dry climate occurring in Oklahoma. However, with proper planning and care in planting and handling tree seedlings, your gully can be a productive woodlot.

Trees can also be used in conjunction with other gully control methods. Tire mats will help hold the soil and protect trees until they are established. Diversion terraces will help control the water and protect trees as well.

HOW CAN I MAKE MY GULLY PRODUCTIVE?

The first step is to contact your local District Conservationist, Soil Conservation Service, County Extension Agent, or the Oklahoma Forestry Division. Professionals will provide the information and assistance necessary to start a gully control project on your land.

The next step is to commit yourself to treating your problem. Gully erosion may take several years to stop, but the wait will be worthwhile, especially if trees are used in revegetation.

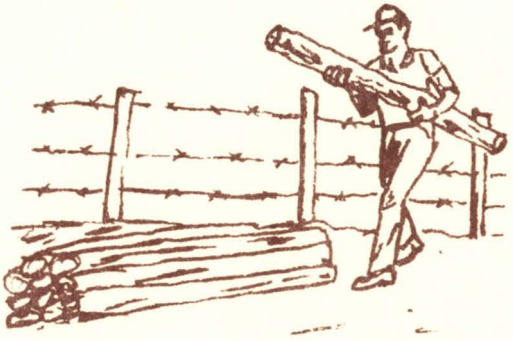
Trees, especially black locust, have long shallow roots that hold the soil in place. Black locust is also a natural fertilizer in that the roots have nitrogen fixing capabilities: as much as 600 pounds per acre (672.1 kg/ha) in older stands. Even on poor sites like gullies, the average height growth for the first ten years is 1½ feet (0.46 m) per year with diameter growth of ⅛ inch (0.42 cm) per year. Black locust is a good seed producer, but despite frequent heavy seed crops, seedlings are rare because of the hard seed coat. Wildlife eat the seeds, but rarely are they spread to

Ten years after trees were planted in same gully as previous picture.

other fields. The locust trees reproduce by root suckers usually the 4th or 5th year, thus providing additional erosion protection and wood products. In dense grassy areas, it may be necessary to "scalp" the immediate planting site to reduce competition for the limited available soil moisture. Black locusts resprout after they are cut and grow even faster than the first stem, making replanting unnecessary or minimal. Other trees to consider in erosion control plantings include russion olive (also a nitrogen fixer), redcedar, catalpa, and osage orange.

WHAT CAN I EXPECT IN TERMS OF PRODUCTION?

POSTS – Black locust makes good fence posts and lasts many years. When planted at an average spacing of 4 feet x 6 feet (1.2 x 1.8 m) with a survival rate of 80 percent, the plot yields 1,452 black locust trees per acre. On the very poorest sites it may take 25 years to make a 4 inch post, but the average site in this geological area will yield one 4 inch (10.2 cm) post per tree in approximately 10 years. A thinning is advisable the first time so the gully will not be disturbed to any degree. After 20 years the stand of locust can be completely cut in small blocks. Sprouts will soon take the place of the stumps and another crop of posts will be on the way.



FIREWOOD – Much like fence post production, black locust trees planted in gullies can be used for firewood. These gullies can become an "energy" plot making a rural home self-sufficient in terms of heating fuel. Black locust firewood burns hotter (with more btu's) than most hardwoods. Locust contains approximately 24.4 million btu's per cord. This is equivalent to almost 174 gallons (658.6 L) of oil.

counties. Requests are handled on a first come first served basis. The county Soil Conservation Service and Agricultural Stabilization and Conservation Service offices will also provide you with information on cost sharing tree planting in your gully. Tree seedlings are provided at a reduced cost through cooperative federal and state nursery programs. Other practices may also be cost shared depending on the area where the gully problem exists. The map and directory show the current location of Forestry Division foresters. Contact the office in your area or the Director, Oklahoma Forestry Division, Room 122, State Capitol Building, Oklahoma City, OK 73105; (405) 521-3886.

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